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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,269	11/06/2000	L. Charles Hardy	53415USA8C.038	9169
32692	7590	08/12/2004	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			EVERHART, CARIDAD	
PO BOX 33427			ART UNIT	
ST. PAUL, MN 55133-3427			PAPER NUMBER	
			2825	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/707,269

Applicant(s)

KAISAKI ET AL. *Hardy*

Examiner

Caridad M. Everhart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on RCE filed 5-25-2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16,18-39 and 41-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16,18-39 and 41-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1-26-04</u> . | 6) <input type="checkbox"/> Other: _____  |

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The page 4 of the initialed form PTO 1449 has been included in the attachments to this Office Action. Any inconvenience caused by its not having been included before is regretted.

### Response to Arguments

Applicants have argued:

The combination of Kaufman, Hudson, and Hirabayashi does not teach or suggest a working liquid that comprises a buffer, as recited in applicant's claims.

That Kaufman reports that acetic acid can be used as a complexing agent and does not teach an acid/conjugate base pair.

That the Office should provide support for the assertion in the rejection that acetic acid is a buffer.

With respect to the first argument, this argument is respectfully traversed because Kaufman et al teaches that acetic acid is added as a buffer in col. 2, lines 29-32. In addition, Hudson teaches that the pH of the planarizing solution must be controlled in col. 4, lines 10-15, and one of ordinary skill in the art would understand controlling the pH of the solution would involve the addition of a buffer as one method of doing so, particularly when combined with the disclosure of a buffer as cited in Kaufman, et al.

With respect to the second argument, it is known in the art that in the dissociation of the acetic acid in aqueous solution there would be the acetate ion and the acetic acid, which would make the acetic acid/ conjugate base pair, and support is provided in the attached references , which is in response to the third argument.

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These references are not taken from the wafer polishing art, and are only relied upon for the disclosure of the preparation of and composition of an acetic acid buffer.

Line et al (US 4,355,110), col. 7, lines 36-46, the acetic acid solution is adjusted to the desired pH using NaOH, and is called a buffer system. In Kaufman et al, the acetic acid is used in a solution that has the pH adjusted(col. 8, lines 23-34) and Kauman et al discloses that it is desirable to maintain the pH. Ammonium hydroxide may be added, and it can be inferred from the teaching of Line et al that the combination of acetic acid and ammonium hydroxide would result in a composition which would aid the buffering properties of the acetic acid, as ammonium acetate would be the conjugate base just as well as sodium acetate in the teaching of Line et al. In addition, Kaufmann et al teaches in col. 2, lines 25-33 that acetic acid is a known buffer for polishing compositions, and Kaufmann teaches that the maintaining of the pH is important in the polishing composition.

McEwan et al (US 3,887,446) teaches acetic acid solution with ammonium hydroxide added as a buffer(col. 1, lines 42-45).

Newman et al (US 5,082,540) prepares a buffer solution from acetic acid and NaOH(col. 4, lines 35-40).

From these references, it is supported that there would be present buffer of acetic acid and the acetate ion which would be the other part acid/conjugate base pair in the solution taught by Kaufmann et al. In addition, as pointed out above, Kaufmann et al teach that it is known in the prior art to use acetic acid buffer in polishing solution, and the rejection is respectfully maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 16,18-39,41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman, et al (US 5,954,997) in view of Hudson (US 5,972,792) or in view of Hirabayashi, et al. (US 5,575,885).

Kaufman et al discloses a CMP slurry which includes an oxidizing agent, a complexing agent and a passivating agent(col. 5, lines 13-18, 43-48, 55-58, and 66-67; col. 6, lines 10-15). Among these are benzotriazole, ammonium oxalate, hydrogen peroxide(col. 10, lines 18-22). Kaufman et al teaches other additives such as stabilizer may be used (col. 6, lines 46-50). Kaufman et al teaches acetic acid and the pH of the solution adjusted as described above, which constitutes a buffer, as argued above and as supported above. Kaufman et al teaches the solution without particles(col. 9, lines

32-61) and the elimination of a component is obvious if the function of that component is not required (MPEP 2144.04).

Kaufman et al teaches the solution both with and without particles, and therefore Hudson is relied upon for its teaching that particles are not required(col. 4, lines 35-65), and Hirabayashi is also relied upon for its teaching that particles are not required(col. 5, lines 9-25 and 47-55; col. 7, lines 43-52; col. 10, lines 22-31).

It would have been obvious to one of ordinary skill in the art at the time of the invention that the solution taught by Kaufman could be used without particles in the way taught by either Hudson or by Hirabayashi, because the particles would not be required, and therefore the elimination of that component would have been obvious(MPEP 2144.04). In addition, further motivation for the combination of the references is provided within Kaufman et al in that Kaufman discloses solutions with or without particles, as pointed out above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 571-272-1892. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*C. Everhart*  
CARIDAD EVERHART  
PRIMARY EXAMINER

C. Everhart  
8-7-2004